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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,627	07/17/2003	Robert Rosenthal	60130-1790; 03MRA0203	1871
26096	7590	04/22/2005	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			ROSENBERG, LAURA B	
			ART UNIT	PAPER NUMBER
			3616	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/621,627	Applicant(s) ROSENTHAL ET AL.	
	Examiner Laura B Rosenberg	Art Unit 3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. The preliminary amendment submitted on 01 July 2004, in which claim 5 was amended, has been entered.

Claim Objections

2. Claims 2 and 6 are objected to because of the following informalities: "ABS" should be written out in its entirety the first time it is presented in a group of claims. The examiner recommends rephrasing to read, "Anti-lock brake system (ABS)" in claims 2 and 6. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ehrlich et al. (2001/0030466A1). In regards to claims 1-3, Ehrlich et al. disclose a method of detecting a wheel end condition comprising the steps of:

- Providing a wheel end (best seen in figures 4, 8)
- Detecting lateral movement of the wheel end (via metal proximity sensing elements #124, 126)

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- Limiting vehicle speed in response to the lateral movement reaching a predetermined value (by modifying air pressure level in the brake chambers; paragraph 0031), which triggers an ABS fault code (integration of ECM with ABS module is discussed throughout the specification)
- Wheel end condition warning device is activated in response to lateral movement reaching the predetermined value (for example, paragraphs 0074, 0075)

In regards to claims 5-7, Ehrlich et al. disclose a wheel end condition detection system (can be seen in figure 10) comprising:

- Wheel end assembly (best seen in figures 4, 8)
- Controller (including ECM) detecting lateral movement of the wheel end assembly (via metal proximity sensors #124, 126) and generating a fault code in response to lateral movement reaching a predetermined value (paragraphs 0074, 0075)
- Warning device activated in response to the fault code (paragraphs 0074, 0075)
- Vehicle component (including brake system) other than the warning device controlled in response to the fault code that is able to maintain safe operation of vehicle (for example, by modifying air pressure level in the brake chambers; paragraph 0031)
- ABS sensor connected to controller for sensing lateral movement (integration of ECM with ABS module is discussed throughout the specification)
- Warning device includes an ABS warning light (ABS warning light because signals are processed by ABS module; paragraph 0076)

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5. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Cochrane et al.(5,945,151). In regards to claim 5, Cochrane et al. disclose a wheel end condition detection system (best seen in figures 1, 2) comprising:

- Wheel end assembly (best seen in figures 1, 2)
- Controller (including sensors #58) detecting lateral movement of the wheel end assembly (typically a wobble of the wheels) and generating a fault code in response to lateral movement reaching a predetermined value (column 2, lines 52-60)
- Warning device activated in response to the fault code (column 2, lines 52-60)
- Vehicle component (including wheel gates #32, 34) other than the warning device controlled in response to the fault code that is able to maintain safe operation of vehicle (wheel gates keep the wheels close to the vehicle in the event that the wheels become disconnected from the remaining wheel end assembly)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrlich et al. (2001/0030466A1). In regards to claim 4, Ehrlich et al. do not specifically disclose that the vehicle speed is limited to approximately 5mph or less. However, It would have been obvious to one skilled in the art at the time that the invention was made to modify

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the step of limiting vehicle speed of Ehrlich et al. such that it comprised a vehicle speed of approximately 5mph or less as claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further, a very slow speed, such as 5mph or less, would be preferred in the event that the condition of the wheel end is failing and thus creating an unsafe driving situation.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrlich et al. (2001/0030466A1) in view of Bell (2003/0108262A1). In regards to claim 10, Ehrlich et al. disclose a bearing (#34, 36). However, Ehrlich et al. do not specifically disclose that the bearing is a "unitized bearing". While the phrase "unitized bearing" depicts the method of forming the bearing and is not germane to the issue of patentability, Bell discloses a wheel end assembly (best seen in figures 1, 2) including a unitized bearing (#22). It would have been obvious to one skilled in the art at the time that the invention was made to modify the wheel end assembly of Ehrlich et al. such that it comprised a unitized bearing as claimed in view of the teachings of Bell so as to provide an improvement in bearing spread, adjustment and lubrication capabilities, and sealing (Bell: paragraph 0013).

Allowable Subject Matter

9. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

With regards to claim 8, the prior art discloses a wheel end condition warning device. However, when the wheel end detection system is used with an ABS module, the prior art does not specifically teach a wheel end condition warning device that is separate from an ABS warning device. This structure in combination with other structure as recited in claims 5-7 defines over the prior art of record.

With regards to claim 9, the prior art discloses a braking system being controlled in response to a fault code indicating excessive lateral movement. However, the prior art does not disclose or teach an engine being controlled in response to the fault code. This structure in combination with other structure as recited in claim 5 defines over the prior art of record.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Makarainen discloses a system that detects a wheel end condition via lateral movement sensors.

MacLean discloses a deflector for sensing wheel wobble associated with bearing failure and alerting the vehicle operator of the condition.

Vencill discloses a system that detects wheel end condition and warns the vehicle operator in the event of an emergency.

Aduddell discloses a sound monitoring system that alerts the vehicle operator when wheel bearings are going bad.

Kullmann et al. disclose an ABS fault mode generator.

Mantini et al. disclose a system that senses an alarm condition with respect to the wheels and alerts the vehicle operator of the problem.

French et al. disclose a sensor module that determines bearing characteristics that can provide early indication of failing bearings or related components.

Colussi et al. disclose a system that provides a warning indicating early wheel bearing wear.

Glock et al. disclose a system for detecting a detached tire.

Mullen discloses a system for warning a vehicle operator of an impending wheel disconnection caused by bearing failure or a loose wheel bolt.

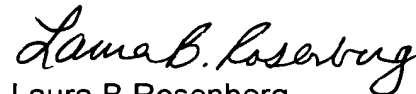
Majernik discloses a system that alerts the vehicle operator when wheel bearings are failing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura B Rosenberg whose telephone number is (571) 272-6674. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Laura B Rosenberg
Patent Examiner
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LBR



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